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U.S. Patent & Trademark Office

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APS Text Servt #3

(FILE 'USPAT' ENTERED AT 11:43:35 ON 02 JAN 97)

SET PAGELENGTH 62

SET LINELENGTH 78

L1 3470 S 252/2,8,67,68,69,305,306,364,372/CCLS
 L2 34 S PERFLUOROIODOALKANE# OR IODOPERFLUOROALKANE#
 L3 201 S PERFLUOROALKYL IODIDE#
 L4 2 S PERFLUOROIODOCARBON# OR IODOPERFLUOROCARBON#
 L5 8 S FLUOROIODOALKANE# OR IODOFLUOROALKANE#
 L6 29 S FLUOROALKYL IODIDE#
 L7 5 S FLUOROIODOCARBON# OR IODOFLUOROCARBON#
 L8 85 S TRIFLUOROIODOMETHANE OR IODOTRIFLUOROMETHANE
 L9 0 S PERFLUOROIODOMETHANE OR IODOPERFLUOROMETHANE
 L10 2 S PERFLUOROMETHYL IODIDE
 L11 201 S TRIFLUOROMETHYL IODIDE
 L12 14 S PERFLUOROIODOETHANE OR IODOPERFLUOROETHANE
 L13 0 S HEXAFLUOROIODOETHANE OR IODOHEXAFLUOROETHANE
 L14 0 S PERFLUOROETHYL IODIDE
 L15 0 S HEXAFLUOROETHYL IODIDE
 L16 21 S PERFLUOROIODOPROPANE OR IODOPERFLUOROPROPANE
 L17 8 S PERFLUOROPROPYL IODIDE
 L18 24 S PERFLUOROIODOBUTANE# OR IODOPERFLUOROBUTANE
 L19 27 S PERFLUOROBUTYL IODIDE
 L20 3 S PERFLUOROIODOPENTANE OR IODOPERFLUOROPENTANE
 L21 2 S PERFLUOROPENTYL IODIDE
 L22 17 S PERFLUOROIODODEXANE OR IODOPERFLUORODEXANE
 L23 34 S PERFLUOROHEXYL IODIDE
 L24 6 S PERFLUOROIODOHEPTANE OR IODOPERFLUOROHEPTANE
 L25 18 S PERFLUOROHEPTYL IODIDE
 L26 16 S PERFLUOROIODOOCTANE OR IODOPERFLUOROOCTANE
 L27 42 S PERFLUOROOCTYL IODIDE
 L28 3 S PERFLUOROIODONONANE OR IODOPERFLUORONONANE
 L29 2 S PERFLUORONONYL IODIDE
 L30 2 S BROMODIFLUOROIODOMETHANE OR CHLORODIFLUOROIODOMETHANE
 L31 4 S DIFLUORODIIODOMETHANE OR DIODODIFLUOROMETHANE
 L32 1 S DIFLUOROIDOMETHANE OR IODODIFLUOROMETHANE
 L33 15 S FLUOROIDODMETHANE OR IODOFLUOROMETHANE OR FLUOROIODOMETHANE
 L34 1 S HEPTAFLUOROIODOPROPANE
 L35 2 S IODOHEPTAFLUOROCYCLOBUTANE
 L36 0 S IODODOUNDECAFLUOROPENTANE
 L37 11 S PENTAFLUOROIODOETHANE OR IODOPENTAFLUOROETHANE
 L38 5 S HEPTAFLUOROIODOPROPANE OR IODOHEPTAFLUOROPROPANE
 L39 0 S NONAFLUOROIODOPENTANE OR IODONONAFLUOROPENTANE
 L40 39 S PENTAFLUOROETHYL IODIDE
 L41 11 S HEPTAFLUOROPROPYL IODIDE
 L42 1 S NONAFLUOROBUTYL IODIDE
 L43 1 S NONAFLUOROIODOBUTANE OR IODONONAFLUOROBUTANE
 L44 600 S L2-L43
 L45 572 S DIFLUOROMETHANE OR (METHYL DIFLUORIDE)
 L46 2 S METHYLENE DIFLUORIDE
 L47 2767 S TRIFLUOROETHANE
 L48 1276 S DIFLUOROETHANE
 L49 220022 S HYDROCARBON# OR ALKANE# OR PROPANE OR BUTANE OR ISOBUTANE
 L50 29935 S PENTANE
 L51 87569 S BUTANE OR CYCLOPROPANE OR ISOBUTANE OR PENTANE OR PROPANE
 L52 2580 S AEROSOL PROPELLANT#

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L53 22840 S AEROSOL
 L54 17517 S PROPELLANT#
 L55 28010 S AEROSOL#
 L56 3286 S (FIRE OR FLAME) (W) (EXTINGUISH? OR SUPPRESS?)
 L57 14 S L1 AND L44
 L58 6 S L57 AND L51
 L59 20 S L44 (P) L51
 L60 1 S L59 AND L1
 L61 2 S L59 AND L52
 L62 2 S L59 AND L54
 L63 2 S L59 AND L53
 L64 2 S L59 AND L56
 L65 7 S L44 AND L52
 L66 2 S L59 AND L55
 L67 80 S L44 AND L55
 L68 2 S L44 (P) L54
 L69 4 S L44 (P) L55
 L70 287 S L52/TI, AB, CLM
 L71 3 S L44 AND L70
 L72 2 S L69 NOT L68
 L73 2 S L71 NOT L69
 L74 12 S L44 (P) (CARBON DIOXIDE)
 E MINOR/IN
 L75 25 S E4-E12
 L76 2 S L75 AND L44
 L77 2 S L75 AND L44
 E MINOR, BARBARA/IN
 E MINOR, BARBARA H/IN
 E MINOR/IN
 L78 13 S E4
 L79 2 S L78 AND L44
 E MINOR/IN
 E MINOR/IN
 L80 411 S FLUOROETHER# OR PERFLUOROETHER#
 L81 19 S BIS DIFLUOROMETHYL ETHER
 L82 3 S HEXAFLUORODIMETHYL ETHER
 L83 13 S PERFLUOROMETHYL ETHER
 L84 2 S HEXAFLUOROOXETANE OR OCTAFLUORODIMETHOXYMETHANE
 L85 5 S METHYL TRIFLUOROMETHYL ETHER
 L86 2 S OCTAFLUORO (3W) DIOXOLANE
 L87 9 S PENTAFLUORODIMETHYL ETHER
 L88 2 S PENTAFLUORO METHYL ETHYL ETHER
 L89 0 S PENTAFLUORO DIMETHYL ETHER
 L90 4 S TRIFLUOROMETHOXY (4W) TETRAFLUOROETHANE
 L91 8 S PERFLUORODIMETHYL ETHER
 L92 442 S L80-L91
 L93 8 S L44 (P) L92
 L94 2 S L93 AND L56
 L95 3 S L44 AND L92 AND L56
 L96 11 S L92 AND L56
 L97 1 S L95 NOT L94
 L98 1305 S L56/TI, AB, CLM
 L99 1 S L98 AND L92

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02 JAN 97 13:03:10 U.S. Patent & Trademark Office P0058

L55 28010 S AEROSOL#

L56 3286 S (FIRE OR FLAME) (W) (EXTINGUISH? OR SUPPRESS?)

L57 14 S L1 AND L44

L58 6 S L57 AND L51

L59 20 S L44 (P) L51

L60 1 S L59 AND L1

L61 2 S L59 AND L52

L62 2 S L59 AND L54

L63 2 S L59 AND L53

L64 2 S L59 AND L56

L65 7 S L44 AND L52

L66 2 S L59 AND L55

L67 80 S L44 AND L55

L68 2 S L44 (P) L54

L69 4 S L44 (P) L55

L70 287 S L52/TI, AB, CLM

L71 3 S L44 AND L70

L72 2 S L69 NOT L68

L73 2 S L71 NOT L69

L74 12 S L44 (P) (CARBON DIOXIDE)

E MINOR/IN

L75 25 S E4-E12

L76 2 S L75 AND L44

L77 2 S L75 AND L44

E MINOR, BARBARA/IN

E MINOR, BARBARA H/IN

E MINOR/IN

L78 13 S E4

L79 2 S L78 AND L44

E MINOR/IN

E MINOR/IN

L80 411 S FLUOROETHER# OR PERFLUOROETHER#

L81 19 S BIS DIFLUOROMETHYL ETHER

L82 3 S HEXAFLUORODIMETHYL ETHER

L83 13 S PERFLUOROMETHYL ETHER

L84 2 S HEXAFLUOROOXETANE OR OCTAFLUORODIMETHOXYMETHANE

L85 5 S METHYL TRIFLUOROMETHYL ETHER

L86 2 S OCTAFLUORO (3W) DIOXOLANE

L87 9 S PENTAFLUORODIMETHYL ETHER

L88 2 S PENTAFLUORO METHYL ETHYL ETHER

L89 0 S PENTAFLUORO DIMETHYL ETHER

L90 4 S TRIFLUOROMETHOXY (4W) TETRAFLUOROETHANE

L91 8 S PERFLUORODIMETHYL ETHER

L92 442 S L80-L91

L93 8 S L44 (P) L92

L94 2 S L93 AND L56

L95 3 S L44 AND L92 AND L56

L96 11 S L92 AND L56

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1. 5,562,861, Oct. 8, 1996, Fluoriodocarbon blends as CFC and halon replacements; Jonathan S. Nimitz, et al., 252/305, 2, 8, 67, 364, 372; 521/909, 910 [IMAGE AVAILABLE]

US PAT NO: 5,562,861 [IMAGE AVAILABLE]

L93: 1 of 8

ABSTRACT:

A new set of effective, environmentally safe, nonflammable, low-toxicity refrigerants, solvents, foam blowing agents, propellants, and firefighting

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US PAT NO: 5,562,861 [IMAGE AVAILABLE]

L93: 1 of 8

CLMS(1)

consisting of ethers, **fluoroethers**, hydrocarbons, hydrofluorocarbons, perfluorocarbons and carbon dioxide, and discharging the mixture from the container, the liquid composition being discharged in aerosol. . .

2. 5,444,102, Aug. 22, 1995, Fluoroiodocarbon blends as CFC and halon replacements; Joathan S. Nimitz, et al., 521/131; 264/DIG.5; 521/98, 910 [IMAGE AVAILABLE]

US PAT NO: 5,444,102 [IMAGE AVAILABLE]

L93: 2 of 8

ABSTRACT:

A new set of effective, environmentally safe, nonflammable, low-toxicity refrigerants, solvents, foam blowing agents, propellants, and firefighting agents is disclosed. The agents are clean, electrically nonconductive, and have short atmospheric lifetimes, zero ozone-depletion potential, and low global warming potentials. The agents comprise at least one **Fluoroiodocarbon** agent satisfying the general formula C._{sub.a}H._{sub.b}Br._{sub.c}Cl._{sub.d}F._{sub.e}I._{sub.f}N._{sub.g}O._{sub.h}, wherein a is between and including 1 and 8; b is between and including 0 and 2; c, d, g, and h are each between and including 0 and 1; e is between and including 1 and 18; and f is between and including 1 and 2, either neat or mixed with additives selected from the group consisting of: alcohols, esters, ethers, **Fluoroethers**, hydrocarbons, hydrofluorocarbons, and perfluorocarbons.

ABSTRACT:

A . . . nonconductive, and have short atmospheric lifetimes, zero ozone-depletion potential, and low global warming potentials. The agents comprise at least one **Fluoroiodocarbon** agent satisfying the general formula C._{sub.a}H._{sub.b}Br._{sub.c}Cl._{sub.d}F._{sub.e}I._{sub.f}N._{sub.g}O._{sub.h}, wherein a is between and including 1. . . and including 1 and 2, either neat or mixed with additives selected from the group consisting of: alcohols, esters, ethers, **Fluoroethers**, hydrocarbons, hydrofluorocarbons, and perfluorocarbons.

SUMMARY:

BSUM(47)

Preferred additives for blending with **Fluoroiodocarbons** are shown in Table 4. Table 4 includes selected alcohols, esters, ethers, hydrocarbons, hydrofluorocarbons, **Fluoroethers**, ketones, and perfluorocarbons with boiling points between -150.degree. C. and +200.degree. C.

SUMMARY:

BSUM(49)

TABLE 4

PREFERRED ADDITIVES TO BE BLENDED WITH FLUOROIDOCARBONS

Class	Name(s)	Formula
alcohol	1-butanol	HO(CH. _{sub.2}). _{sub.3} CH. _{sub.3}
	2-butanol	CH. _{sub.3} CH(OH)CH. _{sub.2} CH. _{sub.3}
	ethanol	CH. _{sub.3} CH. _{sub.2} OH
	methanol	CH. _{sub.3} CH. _{sub.2} OCH. _{sub.2}

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US PAT NO: 5,444,102 [IMAGE AVAILABLE]

L93: 2 of 8

DETD(4)

trifluoroiodomethane, 20% perfluorodimethyl ether, and 70% butane. The performance is nearly identical to that with CFC-12, the same mineral oil lubricant can be used. . .

3. 5,225,504, Jul. 6, 1993, Process for producing peroxide-vulcanizable, fluorine-containing elastomer; Haruyoshi Tatsu, et al., 526/206, 247 [IMAGE AVAILABLE]

US PAT NO: 5,225,504 [IMAGE AVAILABLE]

L93: 3 of 8

ABSTRACT:

A fluorine-containing elastomer capable of giving a primary vulcanization product with a good permanent set through peroxide vulcanization is produced by homopolymerization or copolymerization of a fluorine-containing olefin having 2 to 8 carbon atoms in the presence of an iodine and bromine-containing compound represented by the general formula RBrnIm, wherein R represents a fluorohydrocarbon group, a chlorofluorohydrocarbon group, a chlorohydrocarbon group or a hydrocarbon group, and n and m each are integers of 1 and 2, and a small amount of perfluoro(vinylether) compound having a general formula of CF₂—CFO—CF₂—CF(CF₃)₂—O—(CF₂)_nX, wherein X is a bromine atom or an iodine atom and m and n each are 1, 2 or 3.

SUMMARY:

BSUM(37)

The linear iodine-containing bromine compound includes, for example, 1-bromo-2-iodoperfluoroethane, 1-bromo-3-iodoperfluoropropane, 1-bromo-4-iodoperfluorobutane, 2-bromo-3-iodoperfluorobutane, 1-bromo-2-iodoperfluoro(2-methylpropane), monobromomoniodoperfluorocyclobutane, monobromomoniodoperfluoropentane, monobromomoniodoperfluoro-n-octane, monobromomoniodoperfluorocyclohexane, 1-bromo-1-ido-2-chloroperfluoroethane, 1-bromo-2-ido-2-chloroperfluoroethane, 1,1-dibromo-2-iodoperfluoroethane, 1,2-dibromo-2-iodoperfluoroethane, 1,2-diido-2-bromoperfluoroethane, 1-bromo-2-ido-1,2,2-trifluoroethane, 1-iodo-2-bromo-1,2,2-trifluoroethane, 1-bromo-2-ido-1,1-difluoroethane, 1-iodo-2-bromo-1,1-difluoroethane, 1-bromo-2-ido-1-fluoroethane, 1-iodo-2-bromo-1-fluoroethane, 1-bromo-2-ido-1,1,3,3-pentafluoropropane, 1-iodo-2-bromo-1,1,3,3,3-pentafluoropropane, 1-bromo-2-ido-3,3,4,4,4-pentafluorobutane, 1-iodo-2-bromo-3,3,4,4,4-pentafluorobutane, 1,4-dibromo-2-iodoperfluorobutane, 2,4-dibromo-1-iodoperfluorobutane, 1,4-diido-2-bromoperfluorobutane, 1,4-dibromo-2-ido-3,3,4,4,-tetrafluorobutane, 1,4-diido-2-bromo-3,3,4,4-tetrafluorobutane, 1,1-dibromo-2,4-diiodoperfluorobutane, 1-bromo-2-ido-1-chloroethane, 1-iodo-2-bromo-1-chloroethane, 1-bromo-2-ido-1,1-dichloroethane, 1,3-dibromo-2-iodoperfluoropropane, 2,3-dibromo-2-iodoperfluoropropane, 1,3-diido-2-bromoperfluoropropane, 1-bromo-2-iodoethane, 1-bromo-2-iodopropane, 1-iodo-2-bromopropane, 1-bromo-2-iodobutane, 1-iodo-2-bromobutane, 1-bromo-2-ido-2-trifluoromethyl-3,3,3-trifluoropropane, 1-iodo-2-bromo-2-trifluoromethyl-3,3,3-trifluoropropane, 1-bromo-2-ido-2-phenylperfluoroethane, 1-iodo-2-bromo-2-phenylperfluoroethane, 3-bromo-4-iodoperfluorobutene-1, 3-iodo-4-bromoperfluorobutene-1, 1-bromo-4-iodoperfluorobutene-1.

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US PAT NO: 5,225,504 [IMAGE AVAILABLE]

L93: 3 of 8

BSUM(37)

1-ido-4-bromoperfluorobutene-1, 3-bromo-4-ido-3,4,4-trifluorobutene-1, 4-bromo-3-ido-3,4,4-trifluorobutene-1, 3-bromo-4-ido-1,1,2-trifluorobutene-1, 4-bromo-5-iodoperfluoro-pentene-1, 4-ido-5-bromoperfluoro-pentene-1, 4-bromo-5-ido-1,1,2-trifluoropentene-1, 4-ido-5-bromo-1,1,2-trifluoropentene-1, 1-bromo-2-iodoperfluoroethyl perfluoromethyl ether, 1-bromo-2-iodoperfluoroethyl perfluoroethyl ether, 1-bromo-2-ido-perfluoroethyl perfluoropropyl ether, 2-bromo-3-iodoperfluoro-propyl perfluorovinyl ether, 1-bromo-2-iodoperfluoroethyl perfluorovinyl ether, 1-bromo-2-iodoperfluoroethyl perfluoro-allyl ether, 1-bromo-2-iodoperfluoroethyl methyl ether, 1-ido-2-bromoperfluoroethyl methyl. . .

4. 5,151,492, Sep. 29, 1992, Process for producing peroxide-vulcanizable, fluorine-containing elastomer; Masatoshi Abe, et al., 526/206, 254 [IMAGE AVAILABLE]

US PAT NO: 5,151,492 [IMAGE AVAILABLE]

L93: 4 of 8

ABSTRACT:

A fluorine-containing elastomer capable of giving a primary vulcanization product with a good permanent set through peroxide vulcanization is produced by homopolymerization or copolymerization of a fluorine-containing olefin having 2 to 8 carbon atoms in the presence of an iodine and bromine-containing compound represented by the general formula $RBnIm$, wherein R represents a fluorohydrocarbon group, a chlorofluorohydrocarbon group, a chlorohydrocarbon group or a hydrocarbon group, and n and m are integers of 1 and 2, and a small amount of perfluoro(unsaturated compound) which is iodotrifluoroethylene, perfluoro(bromoalkylvinylether) or perfluoro(iodoalkylvinylether).

SUMMARY:

BSUM(27)

The linear iodine-containing bromine compound includes, for example, 1-bromo-2-iodoperfluoroethane, 1-bromo-3-iodoperfluoropropane, 1-bromo-4-iodoperfluorobutane, 2-bromo-3-iodoperfluorobutane, 1-bromo-2-iodoperfluoro(2-methylpropane), monobromomonoiodoperfluorocyclobutane, monobromomonoiodoperfluoropentane, monobromomonoiodoperfluoro-n-octane, monobromomonoiodoperfluorocyclohexane, 1-bromo-1-ido-2-chloroperfluoroethane, 1-bromo-2-ido-2-chloroperfluoroethane, 1-ido-2-bromo-2-chloroperfluoroethane, 1,1-dibromo-2-iodoperfluoroethane, 1,2-dibromo-2-iodoperfluoroethane, 1,2-diido-2-bromoperfluoroethane, 1-bromo-2-ido-1,2,2-trifluoroethane, 1-ido-2-bromo-1,2,2-trifluoroethane, 1-bromo-2-ido-1,1-difluoroethane, 1-ido-2-bromo-1,1-difluoroethane, 1-bromo-2-ido-1-fluoroethane, 1-ido-2-bromo-1-fluoroethane, 1-bromo-2-ido-1,1,3,3-pentafluoropropane, 1-ido-2-bromo-1,1,3,3,3-pentafluoropropane, 1-bromo-2-ido-3,3,4,4-pentafluorobutane, 1-ido-2-bromo-3,3,4,4-pentafluorobutane, 1,4-dibromo-2-iodoperfluorobutane, 2,4-dibromo-1-iodoperfluorobutane, 1,4-diido-2-bromoperfluorobutane, 1,4-dibromo-2-ido-3,3,4,4-tetrafluorobutane, 1,1-dibromo-2,4-diidoperfluorobutane, 1-bromo-2-ido-1-chloroethane, 1-ido-2-bromo-1-chloroethane, 1-bromo-2-ido-2-chloroethane, 1-bromo-2-ido-1,1-dichloroethane, 1,3-dibromo-2-iodoperfluoropropane, 2,3-dibromo-2-iodoperfluoropropane, 1,3-diido-2-bromoperfluoropropane, 1-bromo-2-idoethane, 1-bromo-2-iodopropane, 1-ido-2-bromopropane, 13:05:01 COPY AND CLEAR PAGE, PLEASE

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US PAT NO: 4,943,622 [IMAGE AVAILABLE]

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BSUM(27)

1-bromo-2-iodo-1,1-dichloroethane, 1,3-dibromo-2-iodoperfluoropropane, 2,3-dibromo-2-iodoperfluoropropane, 1,3-diiodo-2-bromoperfluoropropane, 1-bromo-2-iodoethane, 1-bromo-2-iodopropane, 1-iodo-2-bromopropane, 1-bromo-2-iodobutane, 1-iodo-2-bromobutane, 1-bromo-2-iodo-2-trifluoromethyl-3,3,3-trifluoropropane, 1-iodo-2-bromo-2-trifluoromethyl-3,3,3-trifluoropropane, 1-bromo-2-iodo-2-phenylperfluoroethane, 1-iodo-2-bromo-2-phenylperfluoroethane, 3-bromo-4-iodoperfluorobutene-1, 3-iodo-4-bromoperfluorobutene-1, 1-bromo-4-iodoperfluorobutene-1, 1-iodo-4-bromoperfluorobutene-1, 3-bromo-4-iodo-3,4,4-trifluorobutene-1, 4-bromo-3-iodo-3,4,4-trifluorobutene-1, 3-bromo-4-iodo-1,1,2-trifluorobutene-1, 4-bromo-5-iodoperfluoropentene-1, 4-iodo-5-bromoperfluoro-pentene-1, 4-bromo-5-iodo-1,1,2-trifluoropentene-1, 4-iodo-5-bromo-1,1,2-trifluoropentene-1, 1-bromo-2-iodoperfluoroethyl perfluoromethyl ether, 1-bromo-2-iodoperfluoroethyl perfluoroethyl ether, 1-bromo-2-iodoperfluoroethyl perfluoropropyl perfluorovinyl ether, 2-bromo-3-iodoperfluoropropyl perfluorovinyl ether, 1-bromo-2-iodoperfluoroethyl perfluorovinyl ether, 1-bromo-2-iodoperfluoroethyl perfluoroallyl ether, 1-bromo-2-iodoperfluoroethyl methyl ether, 1-iodo-2-bromoperfluoroethyl methyl. . .

6. 4,748,223, May 31, 1988, Process for producing peroxide-vulcanizable, fluorine-containing elastomer; Tatsu Haruyoshi, et al., 526/206; 525/326.4 [IMAGE AVAILABLE]

US PAT NO: 4,748,223 [IMAGE AVAILABLE]

L93: 6 of 8

ABSTRACT:

A peroxide-vulcanizable, fluorine-containing elastomer having distinguished processability, vulcanization characteristics and physical properties of vulcanized products can be obtained by polymerization of fluorine-containing olefins having 2 to 8 carbon atoms in the presence of an iodine and bromine-containing compound represented by the general formula RBr_nIm_m, where R represents a fluorohydrocarbon group, a chlorofluorohydrocarbon group, a chlorohydrocarbon group or a hydrocarbon group, and n and m are integers of 1 and 2.

DRAWING DESC:

DRWD(4)

The linear iodine-containing bromine compound includes, for example, 1-bromo-2-iodoperfluoroethane, 1-bromo-3-iodoperfluoropropane, 1-bromo-4-iodoperfluorobutane, 2-bromo-3-iodoperfluorobutane, 1-bromo-2-iodoperfluoro (2-methylpropane), monobromomoniodoperfluorocyclobutane, monobromomoniodoperfluoropentane, monobromomoniodoperfluoro-n-octane, monobromomoniodoperfluorocyclohexane, 1-bromo-1-iodo-2-chloroperfluoroethane, 1-bromo-2-iodo-2-chloroperfluoroethane, 1,1-dibromo-2-iodoperfluoroethane, 1,2-dibromo-2-iodoperfluoroethane, 1,2-diiodo-2-bromoperfluoroethane, 1-bromo-2-iodo-1,2,2-trifluoroethane, 1-iodo-2-bromo-1,2,2-trifluoroethane, 1-bromo-2-iodo-1,1-difluoroethane, 1-iodo-2-bromo-1,1-difluoroethane, 1-bromo-2-iodo-1-fluoroethane, -iodo-2-bromo-1-fluoroethane, 1-bromo-2-iodo-1,1,3,3-pentafluoropropane, 1-iodo-2-bromo-1,1,3,3,3-pentafluoropropane, 1-bromo-2-iodo-3,3,4,4-pentafluorobutane, 1-iodo-2-bromo-3,3,4,4-pentafluorobutane, 1,4-dibromo-2-

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US PAT NO: 4,748,223 [IMAGE AVAILABLE]

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DRWD(4)

1,4-diido-2-bromoperfluorobutane, 1,4-dibromo-2-ido-3,3,4,4,-tetrafluorobutane, 1,4-diido-2-bromo-3,3,4,4-tetrafluorobutane, 1,1-dibromo-2,4-diiodoperfluorobutane, 1-bromo-2-ido-1-chloroethane, 1-ido-2-bromo-1-chloroethane, 1-bromo-2-ido-2-chloroethane, 1-bromo-2-ido-1,1-dichloroethane, 1,3-dibromo-2-diiodoperfluoropropane, 2,3-dibromo-2-iodoperfluoropropane, 1,3-diido-2-bromoperfluoropropane, 1-bromo-2-idoethane, 1-bromo-2-iodopropane, 1-ido-2-bromopropane, 1-bromo-2-iodobutane, 1-ido-2-bromobutane, 1-bromo-2-ido-2-trifluoromethyl-3,3,3-trifluoropropane, 1-ido-2-bromo-2-trifluoromethyl-3,3,3-trifluoropropane, 1-bromo-2-ido-2-phenylperfluoroethane, 1-ido-2-bromo-2-phenylperfluoroethane, 3-bromo-4-iodoperfluorobutene-1, 3-ido-4-bromoperfluorobutene-1, 1-bromo-4-iodoperfluorobutene-1, 1-ido-4-bromoperfluorobutene-1, 3-bromo-4-ido-3,4,4-trifluorobutene-1, 4-bromo-3-ido-3,4,4-trifluorobutene-1, 3-bromo-4-ido-1,1,2-trifluorobutene-1, 4-bromo-5-ido-1,1,2-trifluoropentene-1, 4-ido-5-bromoperfluoropentene-1, 4-bromo-5-ido-1,1,2-trifluoropentene-1, 4-ido-5-bromo-1,1,2-trifluoropentene-1, 1-bromo-2-iodoperfluoroethyl perfluoromethyl ether, 1-bromo-2-iodoperfluoroethyl perfluoroethyl ether, 1-bromo-2-iodoperfluoroethyl perfluoropropyl perfluorovinyl ether, 1-bromo-2-iodoperfluoroethyl perfluorovinyl ether, 1-bromo-2-iodoperfluoroethyl perfluoroallyl ether, 1-bromo-2-iodoperfluoroethyl methyl ether, 1-ido-2-bromoperfluoroethyl ether, . . .

7. 4,315,093, Feb. 9, 1982, Fluorinated polyphthalocyanines; Teddy M. Keller, et al., 528/362; 524/612; 528/9, 388, 395, 398, 401 [IMAGE AVAILABLE]

US PAT NO: 4,315,093 [IMAGE AVAILABLE]

L93: 7 of 8

ABSTRACT:

A fluorinated phthalonitrile of the general formula: ##STR1## wherein R' is F or CF₃, R is (CF₂)_n, m is 1 or 2, n is 1 or, p is an integer from 3 to 30, X is 0, 1, 2, or 3, y is 0, 1, 2, or 3 and z is 0 or 1 is prepared by reacting 4-iodophthalonitrile with the appropriate diiodide in the presence of activated copper in a dipolar aprotic solvent. Heating this phthalonitrile to a temperature from about its melting point to about 285. degree. C. produces a polyphthalocyanine resin. If a salt or metal is added prior to the heating, a metal or salt-coordinated polyphthalocyanine is produced. Polyphthalocyanines are useful in coatings, laminates, filament windings, castings, and structural composites.

SUMMARY:

BSUM(20)

Information . . . following references. The alpha.-.omega.-diido-F-ether and -alkanes may be prepared by the method disclosed in Riley, et al. The Synthesis of Fluoroether-Fluorosilicone Hybrid Polymers in J. Fluorine Chem. 10: pp. 85-110, 1977 and McLaughlin, V.C.R. Some Novel Perfluoroalkanedioic Acid Derivatives And .alpha., W-Di-Iodoperfluoroalkanes. In Tetrahedron Letters, 46: pp. 4761-4762, 1968. The 4-iodophthalonitrile may be prepared by the method disclosed in Keller et al. . . .

8. 4,209,458, Jun. 24, 1980, Fluorinated phthalonitriles; Teddy M. Keller, et al., 558/420; 521/124; 528/9, 362; 558/359, 419 [IMAGE AVAILABLE]

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02 JAN 97 13:06:04

U.S. Patent & Trademark Office

P0068

US PAT NO: 4,209,458 [IMAGE AVAILABLE]

L93: 8 of 8

ABSTRACT:

A fluorinated phthalonitrile of the general formula: ##STR1## wherein R' is F or CF₃, R is (CF₃)_n, m is 1 or 2, n is 1 or, p is an integer from 3 to 30, x is 1, 2, or 3, y is 1, 2, or 3 and z is 0 or 1 is prepared by reacting 4-iodophthalonitrile with the appropriate diiodide in the presence of activated copper in a dipolar aprotic solvent. Heating this phthalonitrile to a temperature from about its melting point to about 285.degree. C. produces a polyphthalocyanine resin. If a salt or metal is added prior to the heating, a metal or salt-coordinated polyphthalocyanine is produced. Polyphthalocyanines are useful in coatings, laminates, filament windings, castings, and structural composites.

SUMMARY:

BSUM(20)

Information . . . following references. The .alpha..omega.-diido-F-ether and -alkanes may be prepared by the method disclosed in Riley, et al. The Synthesis of Fluoroether-Fluorosilicone Hybrid Polymers In J. Fluorine Chem. 10: pp. 85-110, 1977 and McLaughlin, V. C. R. Some Novel Perfluoroalkanedioic Acid Derivatives And .alpha., .omega.-Di-Iodoperfluoroalkanes. In Tetrahedron Letters, 46: p. 4761-62. 1968. The 4-iodophthalonitrile may be prepared by the method disclosed in Keller et al. . . .

=> d 194 cit,ab,kwic 1-2

1. 5,562,861, Oct. 8, 1996, Fluoroiodocarbon blends as CFC and halon replacements; Jonathan S. Nimitz, et al., 252/305, 2, 8, 67, 364, 372; 521/909, 910 [IMAGE AVAILABLE]

US PAT NO: 5,562,861 [IMAGE AVAILABLE]

L94: 1 of 2

ABSTRACT:

A new set of effective, environmentally safe, nonflammable, low-toxicity refrigerants, solvents, foam blowing agents, propellants, and firefighting agents is disclosed. The agents are clean, electrically nonconductive, and have short atmospheric lifetimes, zero ozone-depletion potential, and low global warming potentials. The agents comprise at least one fluoroiodocarbon agent satisfying the general formula C_aH_bBr_cCl_dF_eI_fN_gO_h, wherein a is between and including 1 and 8; b is between and including 0 and 2; c, d, g, and h are each between and including 0 and 1; e is between and including 1 and 18; and f is between and including 1 and 2, either neat or mixed with additives selected from the group consisting of: alcohols, esters, ethers, fluoroethers, hydrocarbons, hydrofluorocarbons, and perfluorocarbons.

ABSTRACT:

A . . . nonconductive, and have short atmospheric lifetimes, zero ozone-depletion potential, and low global warming potentials. The agents comprise at least one fluoroiodocarbon agent satisfying the general formula C_aH_bBr_cCl_dF_eI_fN_gO_h, wherein a is between and including 1. . . and including 1 and 2, either neat or mixed with additives selected from the group consisting of: alcohols, esters, ethers, fluoroethers, hydrocarbons, hydrofluorocarbons, and perfluorocarbons.

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U.S. Patent & Trademark Office

P0069

US PAT NO: 5,562,861 [IMAGE AVAILABLE]

L94: 1 of 2

SUMMARY:

BSUM(1)

A related application entitled "Clean Tropodegradable **Fire Extinguishing Agents with Low Ozone Depletion and Global Warming Potentials**," application number 07/800,532 was filed by Nimitz et al. on November. . .

SUMMARY:

BSUM(14)

Flame suppression occurs by two mechanisms: physical and chemical. The physical mechanism involves heat absorption by the molecules sufficient to lower the. . .

SUMMARY:

BSUM(15)

Previous firefighting agents utilized either chemical or physical action or both to achieve **Flame extinguishment**. Agents such as carbon dioxide displace oxygen and also absorb thermal energy. Agents such as water function solely by thermal. . . identified neat perfluorocarbons and some neat iodinated agents as having future potential as firefighting agents (Nimitz et al., "Clean Tropodegradable **Fire Extinguishing Agents with Low Ozone Depletion and Global Warming Potentials**," co-pending U.S. patent application Ser. No. 07/800,532 filed by Nimitz et. . .

SUMMARY:

BSUM(30)

Although. . . neat fluoroiodocarbons has been proposed by one of the current inventors for use in firefighting (Nimitz et al., "Clean Tropodegradable **Fire Extinguishing Agents with Low Ozone Depletion and Global Warming Potentials**," co-pending U.S. patent application Ser. No. 07/800,532, filed Nov. 27, 1991) . . .

SUMMARY:

BSUM(42)

Fluoroiodocarbons are highly effective **Flame suppression** agents, in some cases more effective on a per-mole basis than halons (bromofluorocarbons). Fluoroiodocarbons not only provide chemical extinguishment, but. . .

SUMMARY:

BSUM(46)

Preferred additives for blending with **fluoroiodocarbons** are shown in Table 4. Table 4 includes selected alcohols, esters, ethers, hydrocarbons, hydrofluorocarbons, **Fluoroethers**, ketones, and perfluorocarbons with boiling points between -150.degree. C. and +200.degree. C.

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U.S. Patent & Trademark Office

P0071

US PAT NO: 5,562,861 [IMAGE AVAILABLE]

L94: 1 of 2

BSUM(60)

pressure, effectiveness, reactivity with storage vessels and delivery systems, weight, cost, and toxicity may all be optimized by creating blends. Blended azeotropic and near-azeotropic **Fluoroiodocarbon** firefighting agents allow reduction in the cost of the delivered agent by taking advantage of their superior extinguishment capabilities and the lower costs of hydrofluorocarbons, perfluorocarbons, and **Fluoroethers** components compared to **Fluoroiodocarbons**. In addition, they form constant- and near-constant composition agents, simplifying handling and making performance more predictable than that of nonazeotropic. . .

DETDESC:

DETD(5)

A . . . recycled, reclaimed, or destroyed in an environmentally sound manner. The refrigerator is charged with a blend of 10% (by moles) **trifluoroiodomethane**, 20% **perfluorodimethyl ether**, and 70% butane. The performance is nearly identical to that with CFC 12, the same mineral oil lubricant can be. . .

CLAIMS:

CLMS(1)

We . . .

a mixture of the liquid composition and an aerosol propellant, said aerosol propellant comprising a blend of at least one **Fluoroiodocarbon** of the formula C._aH._bBr._cCl._dF._eI._fN._gO._h, wherein a is between and including 1 and 8, . . . f is between and including 1 and 2, with at least one additive selected from the group consisting of ethers, **Fluoroethers**, hydrocarbons, hydrofluorocarbons, perfluorocarbons and carbon dioxide, and discharging the mixture from the container, the liquid composition being discharged in aerosol. . .

2. 5,444,102, Aug. 22, 1995, Fluoroiodocarbon blends as CFC and halon replacements; Joathan S. Nimitz, et al., 521/131; 264/DIG.5; 521/98, 910 [IMAGE AVAILABLE]

US PAT NO: 5,444,102 [IMAGE AVAILABLE]

L94: 2 of 2

ABSTRACT:

A new set of effective, environmentally safe, nonflammable, low-toxicity refrigerants, solvents, foam blowing agents, propellants, and firefighting agents is disclosed. The agents are clean, electrically nonconductive, and have short atmospheric lifetimes, zero ozone-depletion potential, and low global warming potentials. The agents comprise at least one **Fluoroiodocarbon** agent satisfying the general formula C._aH._bBr._cCl._dF._eI._fN._gO._h, wherein a is between and including 1 and 8; b is between and including 0 and 2; c, d, g, and h are each between and including 0 and 1; e is between and including 1 and 18; and f is between and including 1 and 2, either neat or mixed with additives selected from the group consisting of: alcohols, esters, ethers, **Fluoroethers**, hydrocarbons, hydrofluorocarbons, and perfluorocarbons.

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U.S. Patent & Trademark Office

P0074

US PAT NO: 5,444,102 [IMAGE AVAILABLE]

L94: 2 of 2

BSUM(61)

By blending selected **Fluoroiodocarbons** with hydrofluorocarbons, perfluorocarbons, and **Fluoroethers**, agents are obtained that are highly effective, non-ozone-depleting, and have low toxicity and low cost. In some cases these blended agents provide synergism (better extinguishment than predicted linearly) because of the chemical extinguishment of the **Fluoroiodocarbon** and the physical extinguishment of the additive. The vapor pressure, effectiveness, reactivity with storage vessels and delivery systems, weight, cost, and toxicity may all be optimized by creating blends. Blended azeotropic and near-azeotropic **Fluoroiodocarbon** firefighting agents allow reduction in the cost of the delivered agent by taking advantage of their superior extinguishment capabilities and the lower costs of hydrofluorocarbons, perfluorocarbons, and **Fluoroethers** components compared to **Fluoroiodocarbons**. In addition, they form constant- and near-constant composition agents, simplifying handling and making performance more predictable than that of nonazeotropic. . .

DETDESC:

DETD(4)

A . . . recycled, reclaimed, or destroyed in an environmentally sound manner. The refrigerator is charged with a blend of 10% (by moles) **trifluoroiodomethane**, 20% **perfluorodimethyl ether**, and 70% butane. The performance is nearly identical to that with CFC-12, the same mineral oil lubricant can be used, . . .

=> s 195 not 194
L97 1 L95 NOT L94

=> d 197 cit,ab,kwic

1. 5,562,854, Oct. 8, 1996, Octafluorobutane compositions; Barbara H. Minor, 252/67; 62/114; 510/338, 408 [IMAGE AVAILABLE]

US PAT NO: 5,562,854 [IMAGE AVAILABLE]

L97: 1 of 1

ABSTRACT:

The invention includes compositions of 1,2,2,3,3,4,4,4-octafluorobutane and bis(fluoromethyl) ether, 2,2,4,4-tetrafluoroacetane, 2,2,3,3-tetrafluoroacetane, 1-difluoromethoxy-1,1,2,2-tetrafluoroethane, 1-difluoromethoxy-1,2,2,2-tetrafluoroethane, 2,2,3,3,4,5,5-heptafluorotetrahydrofuran or 2,2,3,3,4,4,5-heptafluorotetrahydrofuran; 1,1,1,2,3,4,4-octafluorobutane and bis(fluoromethyl) ether, 2,2,4,4-tetrafluoroacetane, 2,2,3,3-tetrafluoroacetane, 1-difluoromethoxy-1,1,2,2-tetrafluoroethane, 1-difluoromethoxy-1,2,2,2-tetrafluoroethane, 2,2,3,3,4,5,5-heptafluorotetrahydrofuran, or 2,2,3,3,4,4,5-heptafluorotetrahydrofuran; 1,1,1,2,2,4,4-octafluorobutane and bis(fluoromethyl) ether, 2,2,4,4-tetrafluoroacetane or 2,2,3,3-tetrafluoroacetane; or 1,1,2,2,3,3,4,4-octafluorobutane and methyl tert-butyl ether, bis(fluoromethyl) ether or 1,1,1,2,2,3,3-heptafluoro-3-(1,2,2,2-tetrafluoroethoxy)propane. These compositions, which may be azeotropic or azeotrope-like, may be used as refrigerants, cleaning agents, expansion agents for polyolefins and polyurethanes, aerosol propellants, refrigerants, heat transfer media, gaseous dielectrics, **fire extinguishing agents**, power cycle working fluids, polymerization media, particulate removal fluids,

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02 JAN 97 13:09:12

U.S. Patent & Trademark Office

P0075

US PAT NO: 5,562,854 [IMAGE AVAILABLE] L97: 1 of 1
 carrier fluids, buffering abrasive agents or displacement drying agents.

ABSTRACT:

The . . . be used as refrigerants, cleaning agents, expansion agents for polyolefins and polyurethanes, aerosol propellants, refrigerants, heat transfer media, gaseous dielectrics, fire extinguishing agents, power cycle working fluids, polymerization media, particulate removal fluids, carrier fluids, buffering abrasive agents or displacement drying agents.

SUMMARY:

BSUM(2)

This . . . are useful as refrigerants, cleaning agents, expansion agents for polyolefins and polyurethanes, aerosol propellants, refrigerants, heat transfer media, gaseous dielectrics, fire extinguishing agents, power cycle working fluids, polymerization media, particulate removal fluids, carrier fluids, buffering abrasive agents, and displacement drying agents.

SUMMARY:

BSUM(10)

Azeotropic . . . in the manufacture of closed-cell polyurethane, phenolic and thermoplastic foams, as propellants in aerosols, as heat transfer media, gaseous dielectrics, fire extinguishing agents, power cycle working fluids such as for heat pumps, inert media for polymerization reactions, fluids for removing particulates from. . .

SUMMARY:

BSUM(12)

The . . . are also useful as refrigerants, cleaning agents, expansion agents for polyolefins and polyurethanes, aerosol propellants, heat transfer media, gaseous dielectrics, fire extinguishing agents, power cycle working fluids, polymerization media, particulate removal fluids, carrier fluids, buffering abrasive agents, and displacement drying agents. Further, . . .

DETDESC:

DETD(21)

1,1,1,2,2,4,4,4-octafluorobutane (HFC-338mf, CF₃CH₂CF₃CF₂CH₂CF₃, CF₃CH₂CF₃CF₂CH₂CF₃, CAS Reg. No. [2924-29-0]) has been prepared by photolyzing a mixture of 1,2-difluoroethylene and pentafluoroethyl iodide to give CF₃CH₂CF₃CF₂CH₂CF₃I followed by fluorination of the fluoroiodobutane with mercurous fluoride to give CF₃CH₂CF₃CF₂CH₂CF₃. . .

DETDESC:

DETD(23)

The **fluoroethers** that are included in this invention have two to five carbon atoms. Examples of such **fluoroethers** include the following.
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U.S. Patent & Trademark Office

P0076

US PAT NO: 5,562,854 [IMAGE AVAILABLE]

L97: 1 of 1

DEID(23)

DETDESC:

DETD(91)

The novel compositions of this invention are also useful as ~~fire~~
~~extinguishing~~ agents.

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U.S. Patent & Trademark Office

P0076

US PAT NO: 5,562,854 [IMAGE AVAILABLE]

L97: 1 of 1

DETD(23)

DETDESC:

DETD(91)

The novel compositions of this invention are also useful as fire extinguishing agents.

=> s 156/ti,ab,clm

3882 FIRE/TI

8866 FIRE/AB

9830 FIRE/CLM

3008 FLAME/TI

9047 FLAME/AB

11938 FLAME/CLM

926 EXTINGUISH?/TI

2736 EXTINGUISH?/AB

3665 EXTINGUISH?/CLM

3144 SUPPRESS?/TI

10017 SUPPRESS?/AB

12552 SUPPRESS?/CLM

L98 1305 ((FIRE/TI,AB,CLM OR FLAME/TI,AB,CLM) (W) (EXTINGUISH?/TI,AB,CLM OR SUPPRESS?/TI,AB,CLM))

=> s 198 and 192

L99 1 L98 AND L92

=> d 199 cit

1. 5,562,854, Oct. 8, 1996, Octafluorobutane compositions; Barbara H. Minor, 252/67; 62/114; 510/338, 408 [IMAGE AVAILABLE]

=> d 196 cit,ab 1-11

1. 5,562,861, Oct. 8, 1996, Fluoroiodocarbon blends as CFC and halon replacements; Jonathan S. Nimitz, et al., 252/305, 2, 8, 67, 364, 372; 521/909, 910 [IMAGE AVAILABLE]

US PAT NO: 5,562,861 [IMAGE AVAILABLE]

L96: 1 of 11

ABSTRACT:

A new set of effective, environmentally safe, nonflammable, low-toxicity refrigerants, solvents, foam blowing agents, propellants, and firefighting agents is disclosed. The agents are clean, electrically nonconductive, and have short atmospheric lifetimes, zero ozone-depletion potential, and low global warming potentials. The agents comprise at least one fluoroiodocarbon agent satisfying the general formula C_aH_bBr_cCl_dF_eI_fN_gO_h, wherein a is between and including 1 and 8; b is between and including 0 and 2; c, d, g, and h are each between and including 0 and 1; e is between and including 1 and 18; and f is between and including 1 and 2, either neat or mixed with additives selected from the group consisting of: alcohols, esters, ethers, Fluoroethers, hydrocarbons, hydrofluorocarbons, and perfluorocarbons.

2. 5,562,854, Oct. 8, 1996, Octafluorobutane compositions; Barbara H. Minor, 252/67; 62/114; 510/338, 408 [IMAGE AVAILABLE]

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02 JAN 97 13:12:30

U.S. Patent & Trademark Office

P0077

US PAT NO: 5,562,854 [IMAGE AVAILABLE]

L96: 2 of 11

ABSTRACT:

The invention includes compositions of 1,2,2,3,3,4,4,4-octafluorobutane and bis(fluoromethyl) ether, 2,2,4,4-tetrafluoroacetane, 2,2,3,3-tetrafluoroacetane, 1-difluoromethoxy-1,1,2,2-tetrafluoroethane, 1-difluoromethoxy-1,2,2,2-tetrafluoroethane, 2,2,3,3,4,5,5-heptafluorotetrahydrofuran or 2,2,3,3,4,4,5-heptafluorotetrahydrofuran; 1,1,1,2,3,4,4,4-octafluorobutane and bis(fluoromethyl) ether, 2,2,4,4-tetrafluoroacetane, 2,2,3,3-tetrafluoroacetane, 1-difluoromethoxy-1,1,2,2-tetrafluoroethane, 1-difluoromethoxy-1,2,2,2-tetrafluoroethane, 2,2,3,3,4,5,5-heptafluorotetrahydrofuran, or 2,2,3,3,4,4,5-heptafluorotetrahydrofuran; 1,1,1,2,2,4,4,4-octafluorobutane and bis(fluoromethyl) ether, 2,2,4,4-tetrafluoroacetane or 2,2,3,3-tetrafluoroacetane; or 1,1,2,2,3,3,4,4-octafluorobutane and methyl tert-butyl ether, bis(fluoromethyl) ether or 1,1,1,2,2,3,3-heptafluoro-3-(1,2,2,2-tetrafluoroethoxy)propane. These compositions, which may be azeotropic or azeotrope-like, may be used as refrigerants, cleaning agents, expansion agents for polyolefins and polyurethanes, aerosol propellants, refrigerants, heat transfer media, gaseous dielectrics, fire extinguishing agents, power cycle working fluids, polymerization media, particulate removal fluids, carrier fluids, buffering abrasive agents or displacement drying agents.

3. 5,552,074, Sep. 3, 1996, Refrigerant compositions including bis(difluoromethyl) ether; Donna M. Patron, et al., 252/67; 62/114; 252/194, 305; 264/DIG.5; 510/411, 506 [IMAGE AVAILABLE]

US PAT NO: 5,552,074 [IMAGE AVAILABLE]

L96: 3 of 11

ABSTRACT:

Refrigerant compositions include mixtures of bis(difluoromethyl) ether and a second component wherein the second component is 1-trifluoromethoxy-1,1,2,2-tetrafluoroethane, difluoromethoxy pentafluoroethane, 1-trifluoromethoxy-1,2,2,2-tetrafluoroethane, 1-trifluoromethoxy-2,2,2-trifluoroethane, tris(trifluoromethyl)amine, difluoromethyl sulfur pentafluoride, pentafluoroethyl sulfur pentafluoride, ammonia, butane or isobutane.

The invention also relates to azeotropic or azeotrope-like compositions which comprise admixtures of effective amounts of bis(difluoromethyl) ether and 1-trifluoromethoxy-1,1,2,2-tetrafluoroethane, difluoromethoxy pentafluoroethane, 1-trifluoromethoxy-1,2,2,2-tetrafluoroethane, 1-trifluoromethoxy-2,2,2-trifluoroethane, tris(trifluoromethyl)amine, difluoromethyl sulfur pentafluoride, pentafluoroethyl sulfur pentafluoride, ammonia, butane or isobutane.

4. 5,538,658, Jul. 23, 1996, Refrigerant compositions including pentafluorodimethyl ether; Barbara H. Minor, 252/67; 62/114; 252/305; 510/411 [IMAGE AVAILABLE]

US PAT NO: 5,538,658 [IMAGE AVAILABLE]

L96: 4 of 11

ABSTRACT:

Refrigerant compositions include mixtures of pentafluorodimethyl ether and a second component, wherein the second component is ammonia, dimethyl ether, cyclopropane, propane or propylene.

The invention also relates to azeotropic or azeotrope-like composition which comprise admixtures of effective amounts of pentafluorodimethyl ether and ammonia, dimethyl ether, cyclopropane, propane or propylene.

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02 JAN 97 13:13:00 U.S. Patent & Trademark Office P0078
 5. 5,514,726, May 7, 1996, Polymer foams with inherent nonflammability and thermal stability and methods of preparation thereof; Gus Nichols, et al., 521/152, 153, 154, 157, 178, 179, 182, 184, 187, 189, 902, 907 [IMAGE AVAILABLE]

US PAT NO: 5,514,726 [IMAGE AVAILABLE]

L96: 5 of 11

ABSTRACT:

Polymeric foams with novel chemical compositions are prepared by the condensation of specially-synthesized precursors, which contain (in addition to carbon and hydrogen) one or more of the following elements: oxygen, fluorine, nitrogen (in structures with stable chemical bonds), silicon, boron, phosphorus (in high oxidation states), and certain metals (and/or their oxides and hydroxides). Upon mixing in the proper proportions and/or heating these precursors react rapidly to generate polymeric networks, consisting of heterocyclic crosslink centers, connected with heterochain segments; hydrogen is largely eliminated or replaced by fluorine. These structures possess inherent nonflammability and high thermoxidative stability. Foaming is effected by the gaseous by-products of the condensation reactions, as well as by the addition of foaming agents. The resulting foam products can be formulated to have a wide range of densities and flexibilities.

6. 5,502,251, Mar. 26, 1996, Imides and their salts, as well as their use; Klaus Pohmer, et al., 564/82, 98, 99, 155, 159 [IMAGE AVAILABLE]

US PAT NO: 5,502,251 [IMAGE AVAILABLE]

L96: 6 of 11

ABSTRACT:

Fluoroalkyl- and fluoroaryl-group-containing imides and their salts of general formula (I) ##STR1## wherein R_{sub}F is a fluoroalkyl group with 1 to 18 carbon atoms, a fluoroaryl group with 6 to 12 carbon atoms or a mixed fluoroalkylaryl group with 7 to 18 carbon atoms, wherein the carbon chain can also be interrupted by oxygen atoms,

R_{sub}H is an alkyl group with 1 to 30 carbon atoms, an aryl group with 6 to 12 carbon atoms or a mixed alkylaryl group with 7 to 30 carbon atoms, wherein the carbon chain of the group can also be interrupted by oxygen, nitrogen or sulphur atoms,

Y_{sub}1 and Y_{sub}2 independently of each other represent a ##STR2## X is a hydrogen cation or a uni- or multivalent cation, m is a whole number from 0 to 6, and

z is a whole number from 1 to 7 corresponding to the charge of the cation X.

✓ 7. 5,484,546, Jan. 16, 1996, Refrigerant compositions including an acyclic Fluoroether; Barbara H. Minor, et al., 252/67; 62/114; 252/8, 194, 305, 571; 264/DIG.5; 510/177, 411, 506 [IMAGE AVAILABLE]

US PAT NO: 5,484,546 [IMAGE AVAILABLE]

L96: 7 of 11

D70 10
JAN 22**ABSTRACT:**

Refrigerant compositions include mixtures of hexafluorodimethyl ether and cyclopropane, dimethylether or propylene; bis(difluoromethyl) ether and 2,2,3,4,4-pentafluorooxetane; fluoromethyl trifluoromethyl ether and 2,2,4,4,5,5-hexafluoro-1,3-dioxolane, 1-trifluoromethoxy-1,2,2,2-tetrafluoroethane, dimethylether or tris(trifluoromethyl)amine; trifluoromethyl methyl ether and perfluorooxetane, 2,2,4,4,5,5-hexafluoro-1,3-dioxolane, perfluoromethyl ethyl ether, perfluorodinethoxymethane, 1-trifluoromethoxy-1,2,2,2-tetrafluoroethane, dimethylether or tris(trifluoromethyl)amine; perfluoromethyl ethyl ether and dimethylether, propylene or 1-trifluoromethoxy-1,2,2,2-tetrafluoroethane;

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US PAT NO: 5,484,546 [IMAGE AVAILABLE] L96: 7 of 11
 perfluorodirnethoxymethane and dimethylether or isobutane; 1-trifluoromethoxy-1,1,2,2-tetrafluoroethane and tris(trifluoromethyl)amine or dimethylether; difluoromethoxy pentafluoroethane and dimethylether, isobutane or tris(trifluoromethyl)amine; 1-trifluoromethoxy-1,2,2,2-tetrafluoroethane and dimethylether or isobutane; 1-difluoromethoxy-1,1,2,2-tetrafluoroethane and N(CHF)₂.sub.2 (CF₃.sub.3); or 1,1,1,2,2,3,3-heptafluoro-3-(1,2,2,2-tetrafluoroethoxy)propane and 1,1,2,2,3-pentafluoropropane or 1,1,1,2,3-pentafluoropropane.

8. 5,480,572, Jan. 2, 1996, Compositions including a three carbon cyclic Fluoroether; Barbara H. Minor, 252/67; 62/114; 134/40; 252/8, 194, 305, 571; 264/DIG.5; 510/177, 411, 506 [IMAGE AVAILABLE]

US PAT NO: 5,480,572 [IMAGE AVAILABLE]

L96: 8 of 11

ABSTRACT:

Refrigerant compositions include mixtures of perfluorooxetane and perfluoromethyl ethyl ether or dimethyl ether; 2,2,4,4,5,5-hexafluoro-1,3-dioxolane and cyclopropane or dimethyl ether; 2,2,3,4,4-pentafluorooxetane and difluoromethyl(trifluoromethyl)sulfide or 1-trifluoromethoxy-2,2,2-trifluoroethane; 2,2,4,4-tetrafluorooxetane and 1-difluoromethoxy-1,1,2,2-tetrafluoroethane or 1-difluoromethoxy-1,2,2,2-tetrafluoroethane; 2,2,3,3-tetrafluorooxetane and 1-difluoromethoxy-1,1,2,2-tetrafluoroethane or 1-difluoromethoxy-1,2,2,2-tetrafluoroethane.

9. 5,476,974, Dec. 19, 1995, Omega-hydrofluoroalkyl ethers, precursor carboxylic acids and derivatives thereof, and their preparation and application; George G. I. Moore, et al., 568/677; 106/18.11, 310; 252/380; 521/50; 528/271, 274, 361, 367, 368, 369, 370, 371, 401; 560/155, 161, 170, 172 [IMAGE AVAILABLE]

US PAT NO: 5,476,974 [IMAGE AVAILABLE]

L96: 9 of 11

ABSTRACT:

Normally liquid, omega-hydrofluoroalkyl ether compounds (and selected mixtures thereof) have a saturated perfluoroaliphatic chain of carbon atoms interrupted by one or more ether oxygen atoms. The compounds can be prepared, e.g., by decarboxylation of the corresponding fluoroalkyl ether carboxylic acids and are useful, e.g., in cleaning and drying applications.

10. 5,444,102, Aug. 22, 1995, Fluoroiodocarbon blends as CFC and halon replacements; Joathan S. Nimitz, et al., 521/131; 264/DIG.5; 521/98, 910 [IMAGE AVAILABLE]

US PAT NO: 5,444,102 [IMAGE AVAILABLE]

L96: 10 of 11

ABSTRACT:

A new set of effective, environmentally safe, nonflammable, low-toxicity refrigerants, solvents, foam blowing agents, propellants, and firefighting agents is disclosed. The agents are clean, electrically nonconductive, and have short atmospheric lifetimes, zero ozone-depletion potential, and low global warming potentials. The agents comprise at least one fluoroiodocarbon agent satisfying the general formula $\text{C}_a\text{H}_b\text{Br}_c\text{Cl}_d\text{F}_e\text{I}_f\text{N}_g\text{O}_h$, wherein a is between and including 1 and 8; b is between and including 0 and 2; c, d, g, and h are each between and including 0 and 1; e is between and including 1 and 18; and f is between and including 1 and 2, either neat or mixed with additives selected from the

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US PAT NO: 5,444,102 [IMAGE AVAILABLE] L96: 10 of 11
group consisting of: alcohols, esters, ethers, **fluoroethers**, hydrocarbons, hydrofluorocarbons, and perfluorocarbons.

11. 5,433,880, Jul. 18, 1995, Refrigerant compositions which include a sulfur compound; Barbara H. Minor, et al., 252/67; 62/114; 252/8, 194, 305, 364, 571; 264/53, DIG.5; 510/177, 408, 492 [IMAGE AVAILABLE]

US PAT NO: 5,433,880 [IMAGE AVAILABLE]

Office No good
L96: 11 of 11

*in 1st of application
declaration*

ABSTRACT:

Refrigerant compositions are disclosed which include a first component of bis(trifluoromethyl)sulfide, difluoromethyl(trifluoromethyl)sulfide, pentafluoroethyl sulfur pentafluoride, difluoromethyl sulfur pentafluoride, trifluoromethylsulfur pentafluoride bis(pentafluoroethyl)sulfide and a second component of difluoromethane, 1,1,2,2-tetrafluoroethane, 1,1,1,2-tetrafluoroethane, 1,1,2-trifluoroethane, 1,1-difluoroethane, fluoroethane, dimethyl ether, ammonia, fluoromethyl trifluoromethyl ether, trifluoromethyl methyl ether, 1,1,1,2,2-pentafluoropropane, 2-fluoropropane, cyclopropane, **bis(difluoromethyl)ether**, 1,1,2,2-tetrafluoropropane, 1,1,1,2-tetrafluoropropane, 1-fluoropropane, 1,1,1,3,3-pentafluoropropane, 1,2,2-trifluoropropane, 2,2-difluoropropane, 1,2-difluoropropane, 1,1-difluoropropane, 1-trifluoromethoxy-2,2,2-trifluoroethane, tris(trifluoromethyl)amine or 1,1,2,2,3-pentafluoropropane.

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